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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,361	12/06/2005	Abraham Jan De Bart	NL 030638	5640

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EXAMINER	
BURD, KEVIN MICHAEL	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
07/07/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/559,361	DE BART ET AL.	
	Examiner	Art Unit	
	Kevin M. Burd	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *2/6/2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This office action, in response to the amendment filed 4/2/2009, is a non-final office action.

Response to Arguments

2. Applicant states that the labeling of the figures with text matter is prohibited. However, the examiner notes text labels are used throughout the figures to label the signal lines connecting the unlabelled components of the figures. The previous objection to the drawings was made to allow one reading the figures to clearly understand what is represented by the figures. Due to applicant's reluctance to amend the figures to provide this understanding, the previous objection to the figures is withdrawn.

3. Applicant's arguments filed 4/2/2009 have been fully considered but they are not persuasive. Applicant states Ro does not discloses training pilot carriers. The examiner disagrees. The pilot carriers are used for training in that the phase distortion is estimated from the pilot carriers and the estimation is used for the traffic channels (column 1, lines 24-39). The traffic channels are the data pilot channels. Applicant states Shirakata does not disclose averaging the amplitude and/or phase of the data pilot carriers. The examiner disagrees. The phase difference is averaged. The value of the total pilot carriers will be determined. The total number of pilot carriers is measured. Therefore, the average of the phase is necessary to determine the average of the phase difference. The rejections of the claims are maintained and stated below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4, 5 and 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al (US 2003/0096579) in view of Sampath et al (US 2003/0012308).

Regarding claims 1, 8-10 and 12, Ito discloses the receiver for a multi-carrier communication system shown in figure 2. The sub-carriers are shown in figures 5 and 6. A control unit 208 will carry out a number of functions on the data carriers. Unit 208 receives the data carriers, estimates the line quality of each sub-carrier and transmits a signal representing the result of the estimation (paragraph 0035). This signal is the control signal that will control the mapping of the sub-carriers (paragraphs 0032 and 0041). The mapping is based on the estimate of the quality of the sub-carriers and sub-carriers that do not have an acceptable quality level will not be utilized in subsequent transmissions. The quality is based on the signal amplitude (paragraph 0038, signal power level in the SNR of the received signal). Ito does not disclose each of the sub-carriers comprise training and data symbols. Sampath discloses an OFDM system comprising a receiver (paragraph 0007). The receiver will perform channel estimation by receiving a signal including training symbols embedded within data symbols (abstract). The training symbols allow the receiver to correctly demodulate and decode the

received signal (paragraph 0026). The training allows for an accurate representation of the channel estimation to take place (paragraph 0039). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the teaching of Sampath into the communication system of Ito. By transmitting the training and data symbols, more accurate channel estimation can be determined. The more accurate quality determination will allow the system to operate more efficiently and the transmitted data can be recovered quicker and with fewer errors.

Regarding claim 4, OFDM systems inherently comprise an FFT.

Regarding claim 5, the amplitude of the received signal is used to determine the line quality of each sub-carrier and the quality of the sub-carrier is fed back to map the sub-carriers as stated above.

Regarding claim 7, Ito discloses the system is an OFDM system (paragraph 0034).

Regarding claims 11 and 13, Sampath discloses the training symbols are embedded in the data symbols. Therefore, the training and data symbols will be transmitted on the same carrier.

5. Claims 1-4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ro et al (US 7,283,498) in view of Shirakata et al (US 6,618,352).

Regarding claims 1, 7, 9 and 10, Ro discloses an OFDM communication system (abstract). The system comprises a receiver as shown in figure 6. Pilot signals from each sub-channel are input to a BER measurer 602 to determine the quality of each of

the sub-channels. The BER values are compared 604 and the number of pilot carriers to be allocated to a sub-channel is determined by comparing the BER of the sub-channel estimated using its pilot carriers in a base station (column 3, line 57 to column 4, line 7). If the BER of the pilot carriers for sub-channel 3 is less than a threshold, the number of pilot carriers is decreased (column 4, lines 22-33). Therefore, the quality of the pilot carriers is determined and when that quality is above or below a threshold, the allocation of the pilots is changed. Carriers with acceptable quality will be unchanged and carriers with unacceptable quality will be reduced or eliminated (column 4, lines 22-33). The data carrier and pilot carrier configuration is shown in figure 3. Ro does not disclose a correction unit for supplying a corrected signal comprising information on the data being corrected for a common amplitude error and/or a common phase error. Shirakata discloses an OFDM transmission system that corrects for phase error on each of the sub-carriers so the symbols can be demodulated even if a frequency error and a timing error are occurring between the transmitter and receiver (abstract). Column 15, lines 33-42 discloses a data carrier phase correcting unit directly corrects the data carriers on the basis of the phase error signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the data carrier phase correcting unit of Shirakata into the system of Ro to allow the data to be received properly and allow the demodulation process to operate quickly and more efficiently.

Regarding claims 2, 3 and 6, Shirakata discloses the phase error is determined by calculating the phase difference and determining the average value to more accurately determine the amount of phase change (column 17, lines 25-33).

Regarding claim 4, OFDM systems comprise an FFT. Ro discloses the FFT in column 3, lines 57-65 and Shirakata discloses the FFT in figure 14.

Regarding claim 8, Ro discloses a method of using an OFDM communication system (abstract). The system comprises a receiver as shown in figure 6. Pilot signals from each sub-channel are input to a BER measurer 602 to determine the quality of each of the sub-channels. The BER values are compared 604 and the number of pilot carriers to be allocated to a sub-channel is determined by comparing the BER of the sub-channel estimated using tits pilot carriers in a base station (column 3, line 57 to column 4, line 7). If the BER of the pilot carriers for sub-channel 3 is less than a threshold, the number of pilot carriers is decreased (column 4, lines 22-33). Therefore, the quality of the pilot carriers is determined and when that quality is above or below a threshold, the allocation of the pilots is changed. Carriers with acceptable quality will be unchanged and carriers with unacceptable quality will be reduced or eliminated (column 4, lines 22-33). The data carrier and pilot carrier configuration is shown in figure 3. Ro does not disclose a correction unit for supplying a corrected signal comprising information on the data being corrected for a common amplitude error and/or a common phase error. Shirakata discloses an OFDM transmission system that corrects for phase error on each of the sub-carriers so the symbols can be demodulated even if a frequency error and a timing error are occurring between the transmitter and receiver (abstract). Column 15, lines 33-42 discloses a data carrier phase correcting unit directly corrects the data carriers on the basis of the phase error signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the

data carrier phase correcting unit of Shirakata into the method of Ro to allow the data to be received properly and allow the demodulation process to operate quicker and more efficiently.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/
Primary Examiner, Art Unit 2611
6/30/2009